Has India really become a mobile phone manufacturing giant?[1]

Summary

The remarkable recent rise in mobile phone exports has been of much interest. In the period April 2017-March 2018, imports of mobile phones amounted to nearly $3.6 billion while phone exports were a measly $334 million. Net exports were thus -$ 3.3 billion. By the financial year April 2022-March 2023, phone imports were down to $ 1.6 billion, while phone exports were up to nearly $11 billion. Net exports were thus $ 9.8 billion, a turnaround of $ 13.1 billion from 2017-18. Has India become a mobile phone manufacturing giant, as some have said?

Unfortunately not, as this note will argue. Indeed, the lack of progress thus far raises concerns about the government's entire flagship strategy for creating manufacturing jobs, the PLI scheme.

What did that strategy entail in the mobile phone sector? Starting in 2016, the government raised tariffs on imported mobile phone parts, and in April 2018, it imposed a 20% tariff on importing an entire mobile phone. The idea was to have more production of mobile phones in India. In early 2020, the government also introduced the PLI scheme for mobile phones. Essentially, the government pays manufacturers in India – whether Indian or foreign-owned -- a sum of 6% of a phone's invoice price, coming down to 4% in the fifth year for every incremental unit produced in India. In addition, state governments offer tax incentives, power, and land subsidies for locating in their state.

One key deficiency of the scheme is that the subsidy is paid only for finishing the phone in India, not on how much value is added by manufacturing in India. This matters! It turns out that very little apart from assembly is done in India, though manufacturers claim they intend to do more in the future. So India still imports much of what goes into

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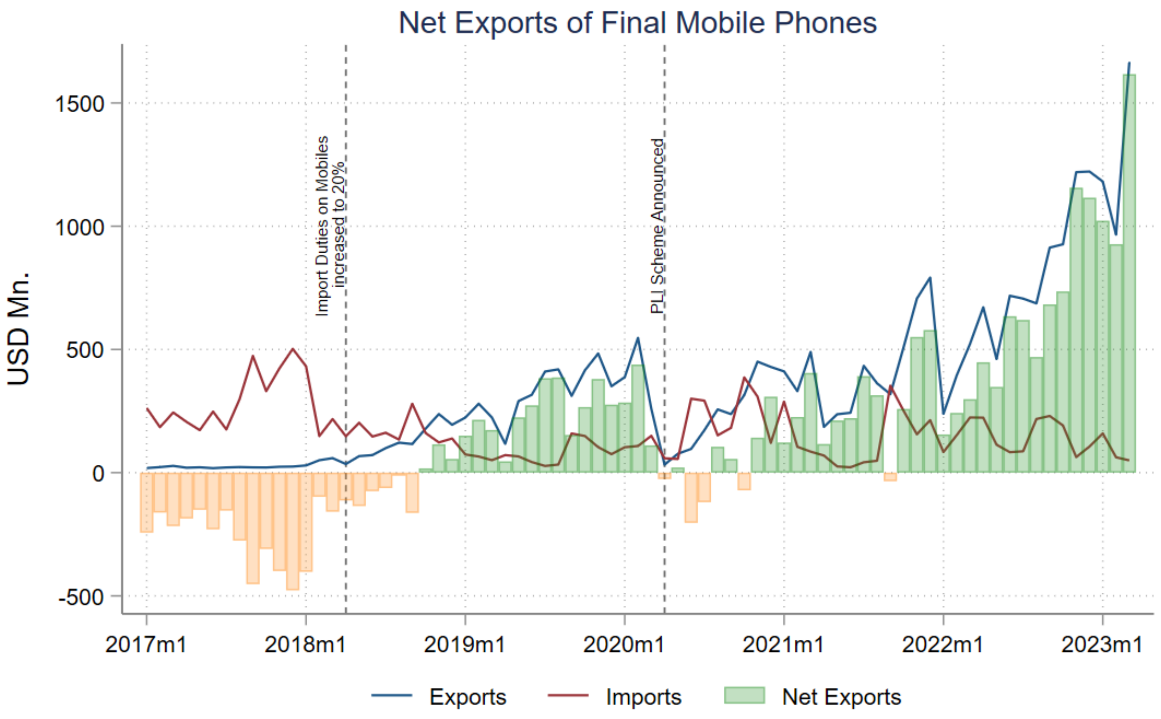
[1] By Rahul Chauhan, Rohit Lamba, and Raghuram Rajan

the mobile phone, and when we correct for that, it is very hard to maintain that net exports have gone up. Indeed, we cannot even tell from the data whether India is paying out more in subsidies and tax waivers to mobile manufacturers who bring the assembly to India than the value they add in India -- since the value added from the assembly is such a small fraction of the value of a mobile phone.

Details

What excites advocates of schemes like PLI is Figure 1, which graphs imports and exports of mobile phones. Note that imports (the red line) turned down soon after the imposition of tariffs in 2018, while exports (the blue line) started taking off. Net exports (the bars) turned positive five months after the imposition of high tariffs in April 2018.

Unfortunately, these data are not the complete picture, though they are what supporters of the PLI scheme focus on. Could we really have built domestic capacity to manufacture mobile phones in five months? The more likely explanation, according to industry experts we talked to, is that rather than importing finished phones, mobile companies imported completely knocked-down kits (ckd), and then assembled phones in India. If so, where are those ckd imports in the trade data? They certainly are not reflected in Figure 1.



Includes HS Codes 851712-14 (Mobile Phones)

Figure 1: Net exports of final mobile phones

An industry expert suggested to us the trade data we should focus on. Figure 2 shows the trade of semiconductors, PCBAs, displays, cameras, and batteries – key components of mobile manufacturing. We export nothing here, and we see a sudden spurt in imports after the imposition of import tariffs on mobile phones in April 2018.[2]

We also see that when mobile phone exports really take off from the last quarter of 2021 (see Figure 1), there is a commensurate rise in net imports of inputs (see Figure 2). The combined imports of semiconductors, PCBAs, displays, cameras, and batteries amounted to

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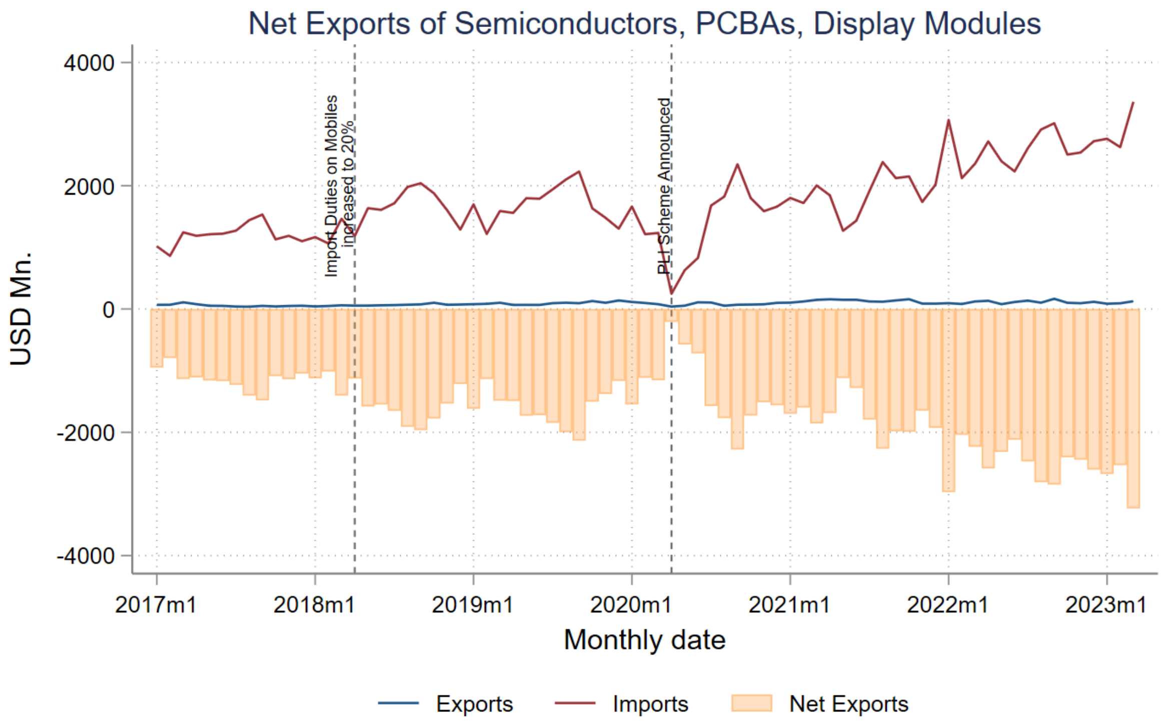
[2] That the parts imports were significant even before import tariffs were imposed probably reflects the substantial assembly of mobile phones in India even before any of the government schemes kicked in. Put differently, we were "manufacturing" for domestic consumption even before tariffs and PLI.

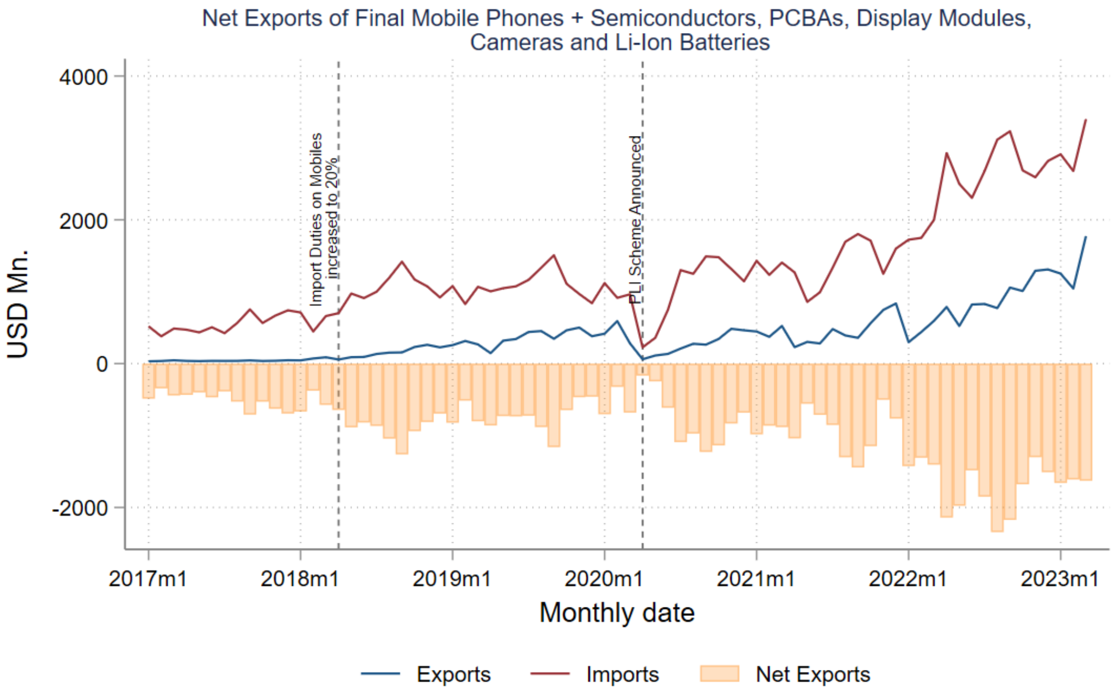
$32.4 billion in FY 2023. These then are the inputs for the mobile phones we produce for the domestic market and for exports.



Includes HS Codes 8542,85177910,85340000,85177990,85177100,85249100,85249200,85177010,85177090,85177990

Figure 2: Net Exports of Semi-conductors, PCBA, Display, and other mobile parts

So what is the change in value added once we combine Figure 1 on net exports of finished phones and Figure 2 on net exports of components? This is in Figure 3, where we add the exports, imports, and net exports of final mobile phones and semiconductors, PCBAs, and other mobile parts together. The combined net exports fell from under -$12.7 billion in FY 2017 to -$21.3 billion in FY 2023! In other words, it is entirely possible that we have become more dependent on imports during the PLI scheme!



Net Exports of Final Mobile Phones + Semiconductors, PCBAs, Display Modules, Cameras and Li-Ion Batteries

Includes HS Codes 851712-14,8542,85177910,85340000,85177990,85177100,85249100,85249200,85258900,85076000,85044030

Figure 3: Combined Net Export of Final Mobile Phones, semiconductors, PCBAs, and other mobile parts

However, the numbers reported above are aggregate value of imports. It could be that we have reduced the import bill per phone slightly, but the increased dollar value of net imports (from $12.7 billion to $23.1 billion) is driven by a dramatic surge in domestic mobile phone demand. That is probably a factor, but after adjusting using publicly available estimates of the increase in domestic demand, it is still the case that net mobile phone exports do not go up over this period.

Another possibility is that inputs such as semiconductors are being imported for other electronic manufacturing too – though we see imports pick up only after tariffs on mobile phones are raised. It may be that tariffs on other electronic goods were also raised as part of the Atmanirbhar program, causing imports of parts for those goods to also go up.

What we have effectively assumed in Figure 3 is that 100% of imports of semiconductors, PCBA, displays, Li-ion batteries, battery chargers, and cameras go into mobile manufacturing. It’s possible that Lithium-ion batteries, cameras, and battery chargers have other alternative uses, and the rise in their imports might reflect increasing demand for other products, such as Li-ion batteries for electric vehicles, DSLR cameras, and chargers for other electronic equipment. Figure 4 redraws Figure 3, removing these subparts, and we find no substantial difference in the net exports pattern – it is still hugely negative and has not increased substantially since 2018.

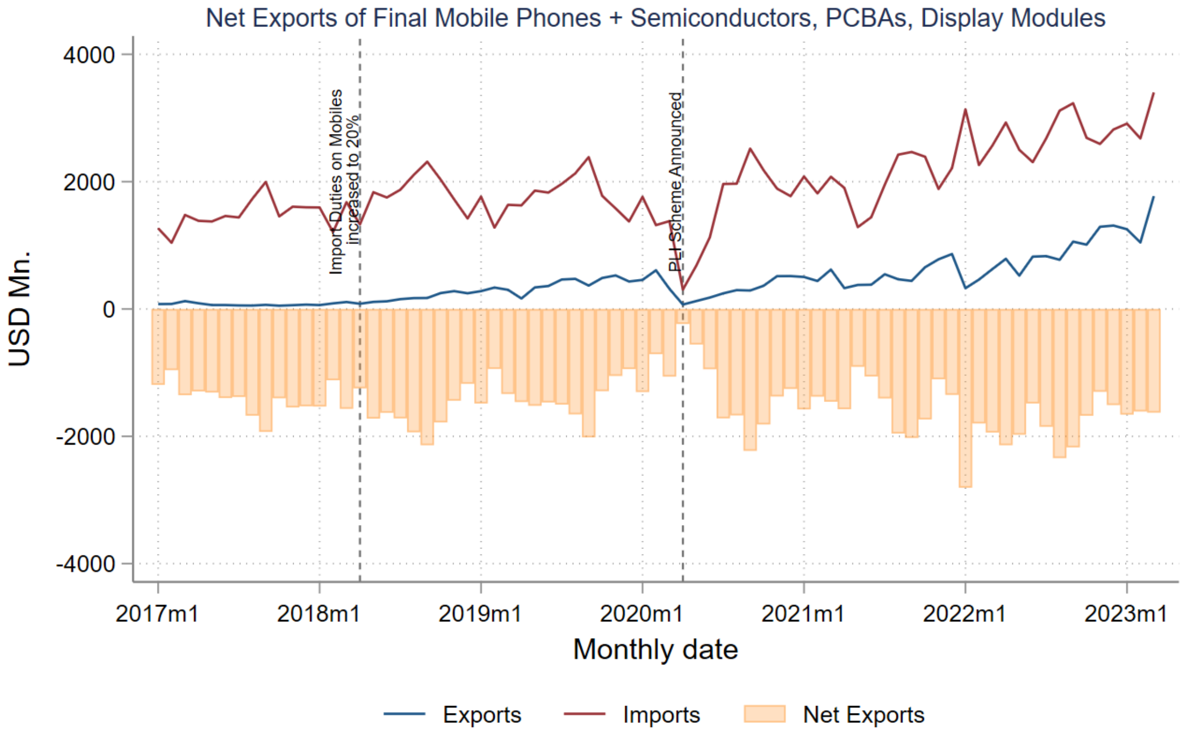


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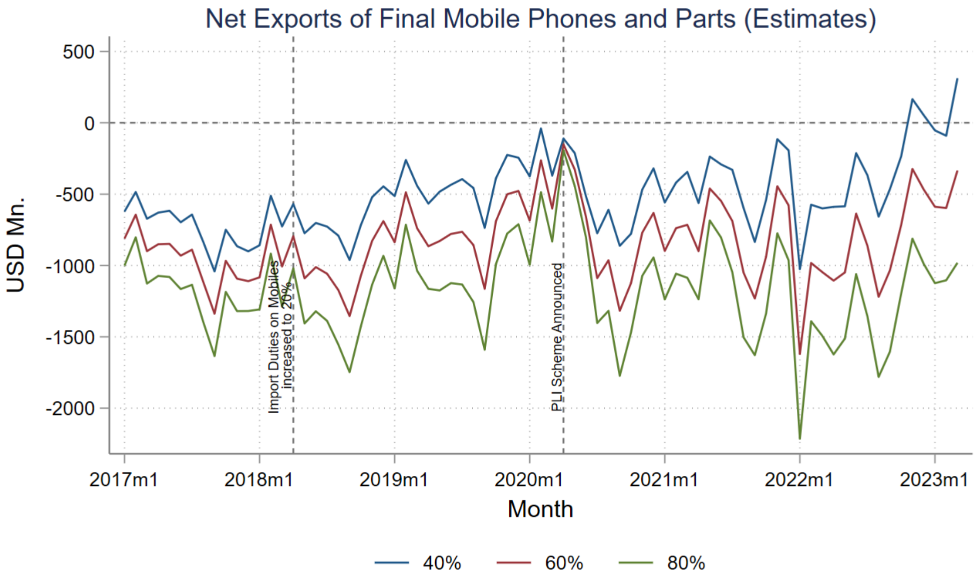
Figure 4: Net exports of final mobile phones, semiconductors, PCBAs, and display modules

What we have in Figure 4 is a lower bound on net imports, the reality is probably much worse for dropping these categories entirely will understate imports. Instead, in Figure 5, we assume three different scenarios where 40, 60, or 80% of the trade categories that contain mobile phone parts end up in mobile phones. We can see that under these scenarios, net exports of mobile phones and parts go above zero today only if we assume 40% or less of the categories that contain mobile phone inputs are used in mobile phone production (that is, of the semiconductors, PCBAs, batteries, and display boards imported, less than 40 percent of value is used in mobile phones). Any higher use and our net exports are still negative.[3] Our sense, given the other data we have, is that the number is likely to be much higher than 40 percent.


Net Exports of Final Mobile Phones and Parts (Estimates)

Graph lines represent estimates of net exports taking proportion of imports of combined input products (Semi-conductors, Cameras, Chargers, Display Modules, Printed Cicuit Boards) going into Mobile Manufacturing. Net Export = Net Export of Final Mobile Phones + Net Exports of Inputs

Figure 5: Net Exports of Final Mobile Phones and Parts (estimates)

In sum, we certainly cannot claim the rise in exports of finished cell phones is evidence of India's prowess in manufacturing. Manufacturers are likely engaging only in assembly, which they seem to have been doing even before tariffs were introduced. This is a minuscule portion of the final value of the mobile phone. For instance, for the Apple iPhone 12 Max, industry estimates are that Foxconn's value added from final assembly and testing is about 4 percent of the manufacturing costs, which in turn are about $1/3^{rd}$ of the value of the mobile phone.

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[3] https://www.cnbc.com/2023/03/09/why-manufacturing-chips-in-us-may-make-smartphones-more-expensive.html

As India goes further into sub-assemblies, the value added in India will increase. But so long as India does not make the component parts themselves (such as the memory, the processor, the lens, the display, and the battery), the manufacturing value added in India will be small. Indeed, a key question is whether the 6 percent subsidy India pays on the finished mobile phone, coupled with state subsidies, actually outweighs the value added in India. This is something the government should look into before extending the scheme widely.

Is the solution then that India should make chips? Mobile phone processors (or chips) are among the more sophisticated of processors, and the processor is among the most sophisticated of mobile phone parts. If after 5 years of tariffs plus PLI in mobile phones, India makes few of even the simplest parts, should we not first try to understand why? Almost surely, the answer lies in the fact that WTO rules do not allow India to tie the PLI subsidy to the value added in India. If so, is the scheme a failure in the making?

The government, which should have better data on value added, should undertake a detailed assessment on how many PLI jobs have been created, the cost to the country per job, and why the PLI scheme does not appear to have worked so far before extending to new sectors.

My response to Raghuram Rajan's LinkedIn Post "Is India really manufacturing mobile phones?"

Repeat offenders like Raghuram Rajan show two symptoms. Public humiliation (https://timesofindia.indiatimes.com/india/to-build-indian-champions/articleshow/94488082.cms) in response to deliberate misrepresentation (https://timesofindia.indiatimes.com/blogs/toi-edit-page/making-in-india-but-how-pli-aims-to-create-a-manufacturing-base-more-evidence-is-needed-before-extending-the-scheme/) fails to teach them a lesson. Further, they have no pride, self-respect or even dignity when it comes to presenting half-truths and falsehoods concocted together to meet a predetermined critique. Worst still, they manipulate data, periods and feign complete ignorance of their own performance on the exact same issue.

Raghuram Rajan is at it again. He tried discrediting the #Smartphone #PLI over 8 months ago, and I responded to him. He went away and now he is back with some deceitful numbers and shoddy comparisons. Let's evaluate.

Assembly is always the first step to Value Addition

He has recently tried to argue that the government's Smartphone PLI scheme is mostly about assembly and not deep #manufacturing, that exports are less than imports - and therefore, the value addition is low. This conclusion by itself is not rocket science, but that he uses false figures, questionable analysis, and the advice of unidentified "industry experts" to reach this conclusion, shows complete bankruptcy of morals on one hand, and lack of understanding of supply chains, #electronics manufacturing, and sadly – even economics - on the other.

Without question, all #electronicsmanufacturing begins with assembly which is light on value addition. In fact, all complex manufacturing across sectors usually begins with assembly. But as the #component and sub-assembly ecosystem builds up driven by scale and supported by exports, new jobs are created, value addition increases, and domestic companies join the global #supplychain. There are many benefits – some come early, and some later. That's the nature of attracting supply chains. The government is doing exactly this. If Rajan knew a different way of doing this, he would have suggested that. But he hasn't – because there isn't any other way, and he knows that.

The article is built on the false premise that all key electronics imports are only for the purposes of mobile production. This is the first lie. #Mobile production utilizes only part of the total key imports of $32.4 billion. Every other conclusion that follows is consequently flawed.

The imports linked to mobile phone manufacturing are merely $22 billion out of the total $32.4 billion – only 65% is used for total mobile manufacturing. Now, the real math emerges. The net foreign exchange outflow, therefore, on account of mobile phone manufacturing for FY 2023 is $10.9 billion, and not $23.1 billion, as the article falsely states.

Rajan has exaggerated the foreign exchange outflow by more than 110%, purely to mislead readers, sensationalize the trade deficit, and put down the PLI Scheme as a failure. But he doesn't stop here.

Next, he wants to project that all mobile phones produced in #India are a result of the #PLIScheme. This is also wrong. Of the total mobile phone production of $44 billion, only ~$10 billion or 22% was eligible for PLI incentive in 2023. In effect, the massive increase in mobile production which shifted India from import dependence to import substitution and now export-led growth within a span of 8 years is a consequence of multiple and carefully-crafted schemes – likely far too complicated for Rajan's over-simplistic mind and desperation to prove that the PLI schemes are failing.

Further, the article attempts to discredit the smartphone PLI scheme by linking it to low value addition - by adding up import figures of components such as PCBAs, displays, batteries, cameras, and chargers. It assumes that all such imports are not just for mobile phone production but for mobile phones produced under the PLI scheme. This, too, is wrong. Let's take the case of batteries. The total import of batteries for 2023 was $2.8 billion across all its uses, not just mobile phones. Only 10.3% of battery imports were used for mobiles i.e., $290 million. Furthermore, only 22% of such batteries were used in mobile phones produced under the PLI scheme. In effect, merely 2.3% of the imported batteries are used in mobile phones produced under the PLI Scheme. More than 97% of the imported batteries have nothing to do with the mobile phones manufactured under the PLI Scheme. Rajan doesn't let facts get in the way of his analysis.

I can provide component-by-component analysis, but that would only heap more humiliation on Rajan's professional competency. Hopefully, his peers will do that in a sufficient manner. Let me turn to his other manipulations.

Congress had left smartphone manufacturing in a disaster

If PM Modi's government had made the mistake of following the policies for mobile manufacturing and the results that existed at the end of the Congress regime, we would still be importing 78% of all mobile phones sold in India. That's where Congress left the nation – almost entirely dependent upon imports. Without new policy interventions after 2015, the import bill on account of domestic consumption alone in 2023 would have been to the tune of $30 billion – vast majority of it on account of imported mobile phones and $5 billion on account of components for any mobile phones that would have been manufactured in India.

By comparison, the actual imports today are estimated to be at $25 billion, which represents not only a saving of $5 billion of foreign exchange outflow but directly corresponds to what Rajan is most worried about - domestic manufacturing value addition.

This, in part, explains why Rajan deliberately chose 2018 as a starting point, and not 2014 – unbecoming both a gentleman, and most certainly, an economist. If he had, he would have to admit that since then, mobile production is up nearly 1400% and mobile exports are up nearly 4200%. That certainly would not fit the narrative Rajan wants to build here.

The period of #data is deliberately misleading

The year from which the data has been taken is deliberately misleading i.e., 2018-19. If a comparison had to be made with the performance of the NDA Government versus the UPA Government, then the manufacturing data should have been taken post FY 2014, and not from FY 2018. If a comparison had to be made to show the impact of the PMP Scheme, the data should have been taken from FY 2017. If a comparison had to be made to show the impact of the PLI Scheme, the data should have been taken from FY 2021. FY 2018 has been taken mischievously to reach a pre-determined conclusion even before the analysis was initiated. FY 2018 does not represent any milestone. No policy started or ended there. Not PMP, not MEIS, and certainly not PLI. So quite apart from misrepresenting figures, Rajan makes the cardinal mistake of picking a period of time to suit his predetermined objective – and even then, the analysis falls flat.

Further, by picking projections of 2 of the 5 years of the PLI scheme (2021-2023), and not all 5 (2021-2026), he makes another attempt to mislead readers. If, in fact, he had picked the projections under the PLI scheme that ends in 2026 and taken the total exports of electronics under consideration, it would have exhibited a sharply falling trade deficit, multiple times increase in exports, and a further increase in value addition which is currently upwards of 20% for the electronics sector as a whole, and corresponding, but admittedly lower for mobile manufacturing – depending on companies, their current ecosystem, models, complexities and vintages. Usually, the older the smartphone model, the higher the value addition - but nowhere near what Rajan hopes to falsely parade. Furthermore, I can assure that we are doing far better than what China was able to do in its first 4-6 years of mobile manufacturing.

Rajan also alleges that even the smallest parts of mobile phones are not manufactured in India. This comment exhibits complete intellectual bankruptcy and lack of understanding of electronics manufacturing in general, and smartphones in particular. The smallest parts of any smartphone are usually #semiconductors. Semiconductors are one of the most complex technologies, and not only are they not manufactured in India yet, but even #China with a $1.3 trillion electronics market and Vietnam with a $140 billion (2021 figure) production value do not produce semiconductors. It's well known, however, that we have a Semiconductor PLI scheme in place and every effort is underway to attract investments and build capacity in that space.

The government understands that this takes time and requires a massive effort. And that's exactly what we are engaged in – building domestic capacity, reducing dependence on China, and increasing value addition.

PLI is well thought through, not a largesse

The author further passes off PLI as some sort of a largesse. Nothing could be further from the truth. The PLI scheme has three clear characteristics. Firstly, it addresses disabilities, most of which were caused by Congress' 60-year misrule since Independence. In 2019, a study of 14 parameters, which impact cost of smartphone manufacturing across China, India, and Vietnam, was undertaken. It showed that India suffers a massive cost disability across several factors. The PLI scheme only partially addresses such disabilities with a specific objective to attract global supply chains with a proven track record of building scale, increasing exports, creating new employment opportunities, and incorporating domestic companies into their supply chains - and they are doing exactly that. The scheme is only two years old. Obviously, big value additions will follow suit. But Rajan would like value addition to be delivered miraculously ignoring all principles of economics, scale, geopolitics, and international experience.

Secondly, the PLI scheme is a replacement for the MEIS scheme, which was broad-based. Instead, it is linked to steep targets of incremental production of mobile phones over Rs.15,000 and a minimum investment of Rs.1,000 crores within the first 4 years.

Finally, the PLI scheme - as Rajan recognizes, but refuses to explain the significance of it – is consistent with the WTO regime. It allows for predictability and building investor confidence.

Rajan's self-doubt and mysterious sources

The article has a strange “self-doubt” theme from beginning to end. It cites data, then questions the data, makes assumptions, then questions the authenticity of the assumptions, and yet, sticks to conclusions. It offers multiple caveats - the oldest trick in the book. When caught out, as he is here, he would run to take refuge under the fact that he himself is questioning his data, assumptions, and conclusions.

Rajan also quotes advice from “industry experts” but fails to identify who they are. We checked with ICEA, MAIT, CII, FICCI, ASSOCHAM, even IAMAI - and not a single trade body with any reputation has either provided this information or stands by it. Rajan should come out in the open and declare his sources. But that is usually asking for too much in a political hitjob article inspired by his "leader" Rahul Gandhi. Hope his tribe of economists also realizes his willingness to compromise on basic principles to pursue politics of falsehoods – just like Rahul Gandhi. My advice to Rajan who as RBI governor presided over the wrecking of India’s banking sector is simple - decide if you want to masquerade as a failed economist or as a soon to fail politician - pick one and stick to it.

Deliberately ignoring the positives

Finally, Rajan leaves the article open by inviting the government to state if any other policy objectives have been achieved to help assess the PLI scheme before extending it further. Here is a shortlist. Most of this is in the public domain. But obviously, Rajan left them out since that would distract from his predetermined objective. Regardless, here are a few. There are more.

1. ~1,20,000 new direct #jobs created and nearly 2,50,000 new indirect jobs in 24 months. This is a conservative estimate.
2. Women employment - ~70% of all new blue-collared jobs. History in the making.
3. A ~1400% increase in mobile production after Congress-led government completed its term in 2014 (from $3 billion to $44 billion in 2023).
4. A ~4200% increase in mobile exports after Congress-led government completed its term in 2014 (from $260 million to $11.1 billion in 2023).
5. Transformation of the mobile phone industry from being almost entirely import dependent at the end of the Congress regime in 2014-15 to being 99.2% Atmanirbhar by FY 2023 and exports of over Rs. 90,000 crores.
6. Building some of India’s largest factories in terms of employees and production. The scale and speed are unprecedented in India’s history.

7. Increase in income and improvement in ease of living - 80% of the jobs created are first-time wage earners in blue-collar jobs.

8. Increase in #tax collection - ~Rs.1,01,397 crores of incremental GST during the duration of the PLI Scheme, of which ~Rs.42,897 crores have already been collected as of March 31, 2023. PLI is linked to incremental production.

9. The trade deficit will continue to slide down over the next 4-5 years if the current trend follows, wherein India is targeting electronics exports of ~$120 billion. Mere increase in value addition with large domestic consumption will never reduce trade deficit. Massive exports are required for that.

10. Shifting of massive global supply chains to India over the last 3-4 years, and especially post deployment of the PLI Scheme.

11. New markets which have been added for electronics exports including Western Europe, Americas, and Developed Asia.

12. Green shoots in the component #ecosystem.

13. Large companies such as Tatas have now begun not just component manufacturing but will soon be manufacturing iPhones in India. Opportunity for Indian SMEs to join the global supply chain.

14. The overall positive sentiment created by the success of the Smartphone PLI Scheme.

15. The upside of electronics supply chains shifting to India in other sectors and global supply chains who are now looking at India as a source of manufacturing.